## AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of utilizing model based intelligent agents for diagnosing and isolating malfunctions in a computer-controlled machinery comprising the steps of:

disposing a plurality of intelligent agents in the computer controlled machinery, wherein the plurality of agents are disposed in a plurality of hierarchical levels ~~wherein~~ and each intelligent agent has diagnostic capability relative to the hierarchical level the intelligent agent is disposed in, and ~~wherein said~~ the plurality of intelligent agents are in data communication with a plurality of computer controllers ~~of~~ disposed within the machinery and with each other;

collecting data from [[a]] the plurality of computer controllers disposed within the computer controlled machinery via at least one [[of]] intelligent agent disposed in a first hierarchical level, wherein ~~said~~ the collected data is analyzed to obtain a first level of diagnostic information and ~~wherein said~~ the first level of diagnostic information is communicated to at least one intelligent agent disposed in a second hierarchical level;

employing ~~said~~ at least one intelligent agent disposed in ~~said~~ the second hierarchical level to perform a second level of diagnostic tasks on the first level of diagnostic information to obtain a second level of diagnostic information, and ~~wherein said~~ the second level of diagnostic information is communicated to at least one intelligent agent disposed in a third hierarchical level;

employing ~~said~~ the at least one intelligent agent disposed in ~~said~~ the third hierarchical level to perform a third level of diagnostic tasks using ~~said~~ the second level of diagnostic information, wherein ~~said~~ the third level of diagnostic tasks includes analyzing ~~said~~ the second level of diagnostic information relative to reference information obtained from a remotely

located knowledge database, to accomplish fault isolation within the computer controlled machinery.

2. (Currently Amended) The method of claim 1 wherein the ~~diagnostic capability of the~~ step of collecting data from at least one intelligent agent disposed in the first hierarchical level further includes the ~~capability to collect and analyze~~ step of collecting and analyzing data to accomplish a first level of fault isolation.

3. (Currently Amended) The method of claim 2 wherein the ~~diagnostic capability of the~~ step of collecting data from at least one intelligent agent disposed in the second hierarchical level further includes the ~~capability to collect and analyze~~ step of collecting and analyzing data to accomplish a second level of fault isolation, wherein ~~said~~ the second level of fault isolation surpasses ~~said~~ the first level of fault isolation.

4. (Currently Amended) The method of claim 3 wherein the ~~diagnostic capability of the~~ step of collecting data from at least one intelligent agent disposed in the third hierarchical level further includes the ~~capability to collect and analyze~~ step of collecting and analyzing data to accomplish a third level of fault isolation, wherein ~~said~~ the third level of fault isolation surpasses ~~said~~ the second level of fault isolation.

5. (Currently Amended) The method of claim 1 wherein the intelligent agents are in ~~wireless~~ data communication with each other.

6. (Currently Amended) The method of claim 1 wherein the ~~computer controllers include diagnostic capability wherein said diagnostic capability is provided in~~ intelligent agent includes at least one Application Specific Integrated Circuit (ASIC) disposed within a computer controller.

7. (Currently Amended) The method of claim 1 wherein said step of performing the second level of diagnostic tasks further includes the step of identifying a failure model relative to the first level of diagnostic information.

8. (Currently Amended) The method of claim 7 wherein said step of performing the third level of diagnostic tasks further includes ~~using~~ the step of analyzing ~~said~~ the failure model relative to reference information ~~disposed~~ stored within the at least one intelligent agent disposed in the third hierarchical level ~~or reference information obtained from a remote central knowledge facility~~.

9. (Currently Amended) ~~The method of claim 1~~ A method of utilizing model based intelligent agents for diagnosing and isolating malfunctions in a computer-controlled machinery comprising the steps of:

disposing a plurality of intelligent agents in the computer controlled machinery, wherein the plurality of agents are disposed in a plurality of hierarchical levels and each intelligent agent has diagnostic capability relative to the hierarchical level the intelligent agent is disposed in, and the plurality of intelligent agents are in data communication with a plurality of computer controllers disposed within the machinery and with each other;

collecting data from the plurality of computer controllers disposed within the computer controlled machinery via at least one intelligent agent disposed in a first hierarchical level, wherein the collected data is analyzed to obtain a first level of diagnostic information and the first level of diagnostic information is communicated to at least one intelligent agent disposed in a second hierarchical level;

employing at least one intelligent agent disposed in the second hierarchical level to perform a second level of diagnostic tasks on the first level of diagnostic information to obtain a second level of diagnostic information that is communicated to at least one intelligent agent disposed in a third hierarchical level, wherein the second level of diagnostic tasks includes reorganizing ~~the~~ at least one intelligent agent disposed in the first hierarchical level;

employing the at least one intelligent agent disposed in the third hierarchical level to perform a third level of diagnostic tasks using the second level of diagnostic information, wherein the third level of diagnostic tasks includes analyzing the second level of diagnostic information relative to reference information, to accomplish fault isolation within the computer controlled machinery.

10. (Currently Amended) The method of claim 9 wherein ~~reorganization involves~~ said step of reorganizing further includes the steps of re-tasking at least one intelligent agent to perform diagnostic tasks on at least one computer controller that the at least one intelligent agent was not previously performing diagnostic tasks on.

11. (Currently Amended) The method of claim [[8]] 9 wherein the at least one intelligent agent disposed in the third hierarchical level obtains reference information from ~~the~~

~~remote central~~ a remotely located knowledge ~~facility~~ database through a wireless communications link.

12. (Currently Amended) The method of claim [[1]] 9 further ~~comprising~~ including the step of providing a data link to at least one fault indicator operative to alert a user of the computer controlled machinery that a fault has occurred.

13. (Currently Amended) A method of utilizing model based intelligent agents for diagnosing and isolating malfunctions in a vehicle comprising the steps of:

disposing a plurality of intelligent agents in the vehicle, wherein the plurality of agents are disposed in a plurality of hierarchical levels ~~wherein~~ and each intelligent agent has diagnostic capability relative to the hierarchical level the intelligent agent is disposed in, and ~~wherein said~~ the plurality of intelligent agents are in data communication with a plurality of computer controllers ~~of~~ disposed within the vehicle and with each other;

collecting data from [[a]] the plurality of computer controllers disposed within the vehicle via at least one ~~of~~ intelligent agent disposed in a first hierarchical level, wherein ~~said~~ the collected data is analyzed to obtain a first level of diagnostic information and ~~wherein said~~ the first level of diagnostic information is communicated to at least one intelligent agent disposed in a second hierarchical level;

employing ~~said~~ at least one intelligent agent disposed in ~~said~~ the second hierarchical level to perform a second level of diagnostic tasks ~~wherein said~~ and the second level of diagnostic tasks includes reorganizing the at least one intelligent agent disposed in the first hierarchical level to obtain a second level of diagnostic information, wherein reorganization involves re-

tasking at least one intelligent agent to perform diagnostic tasks on at least one computer controller that the at least one intelligent agent was not previously performing diagnostic tasks on, and ~~wherein said~~ the second level of diagnostic information is communicated to at least one intelligent agent disposed in a third hierarchical level;

employing ~~said~~ the at least one intelligent agent disposed in ~~said~~ the third hierarchical level to perform a third level of diagnostic tasks using ~~said~~ the second level of diagnostic information, wherein ~~said~~ the third level of diagnostic tasks includes analyzing ~~said~~ the second level of diagnostic information relative to reference information to accomplish fault isolation within the vehicle.

14. (Currently Amended) The method of claim 13 wherein the ~~diagnostic capability of the~~ step of collecting data from at least one intelligent agent disposed in the first hierarchical level further includes the ~~capability to collect and analyze~~ step of collecting and analyzing data to accomplish a first level of fault isolation.

15. (Currently Amended) The method of claim 14 wherein the ~~diagnostic capability of the~~ step of collecting data from at least one intelligent agent disposed in the second hierarchical level further includes the ~~capability to collect and analyze~~ step of collecting and analyzing data to accomplish a second level of fault isolation, wherein ~~said~~ the second level of fault isolation surpasses ~~said~~ the first level of fault isolation.

16. (Currently Amended) The method of claim 15 wherein the ~~diagnostic capability of the~~ step of collecting data from at least one intelligent agent disposed in the third hierarchical

level further includes the ~~capability to collect and analyze~~ step of collecting and analyzing data to accomplish a third level of fault isolation, wherein ~~said~~ the third level of fault isolation surpasses ~~said~~ the second level of fault isolation.

17. (Currently Amended) The method of claim 13 further ~~comprising~~ including the step of providing a data link to at least one fault indicator operative to alert a user of the vehicle that a fault has occurred.

18. (New) The method of claim 13 wherein the at least one intelligent agent disposed in the third hierarchical level obtains reference information from a remotely located knowledge database through a wireless communications link.